



RESEARCH PROGRESS REPORT SUMMARY

Grant 01609: Use of Probiotic to Reduce the Symptoms of Inflammatory Bowel Disease

Principal Investigator: Dr. Albert E. Jergens, DVM, PhD

Research Institution: Iowa State University

Grant Amount: \$97,416.00

Start Date: 1/1/2012 **End Date:** 6/30/2016

Progress Report: End-Year 4

Report Due: 12/31/2015 **Report Received:** 12/15/2015

Recommended for Approval: Approved

(Content of this report is not confidential. A grant sponsor's CHF Health Liaison may request the confidential scientific report submitted by the investigator by contacting the CHF office. The below Report to Grant Sponsors from Investigator can be used in communications with your club members.)

Original Project Description:

Idiopathic inflammatory bowel disease (IBD) is a common cause of chronic gastrointestinal disease in dogs. Accumulating evidence in human IBD and animal models suggests that imbalances in composition of the intestinal microbiota contribute to the pathogenesis of chronic intestinal inflammation. Recent studies have also shown that dogs with IBD have distinctly different duodenal microbial communities compared to healthy dogs. Current treatments for IBD include the administration of nonspecific anti-inflammatory drugs which may confer serious side effects and do not address the underlying basis for disease, namely, altered microbial composition. Use of probiotics (viable, non-pathogenic bacteria that exert health benefits beyond basic nutrition) offers an attractive, physiologic, and non-toxic alternative to shift the balance to protective species and treat IBD. The aim of the proposed study is to investigate the clinical, microbiologic, and anti-inflammatory effects of probiotic VSL#3 in the treatment of canine IBD. We hypothesize that VSL#3 used as an adjunct to standard therapy (i.e., elimination diet and prednisone) will induce a beneficial alteration of enteric bacteria leading to induction and maintenance of remission in dogs with IBD. A randomized, controlled clinical trial of 8 weeks duration will assess the efficacy of standard therapy + probiotic versus standard therapy alone. There is a need for additional data to be generated to provide proof of efficacy in probiotic therapy before these agents can be applied to widespread clinical use. These studies will also provide highly relevant insight into the anti-inflammatory effects of probiotics for treatment of human and canine IBD.



Grant Objectives:

To determine the clinical, microbiologic, and anti-inflammatory effects of probiotic VSL #3 in the treatment of canine IBD.

Publications:

- Otoni, R. Atilmann, M. Garcia-Sancho, et al. Serologic and fecal markers in prediction of acute disease course in canine chronic enteropathies. *J Vet Intern Med* 2012; 26:768-769.
- Slovak et al. Inter- and intra-observer assessment in the endoscopic assessment of canine inflammatory bowel disease. *J Vet Intern Med* 2013; 27:699.
- Slovak et al. Development and validation of a simplified endoscopic activity score for canine chronic enteropathies. 2013 ECVIM research abstract; *J Vet Intern Med* 2013.
- Slovak et al. Development and validation of a simplified endoscopic activity score for canine chronic enteropathies. 2013 ECVIM research abstract; *Vet J* 2014; article in press.
- Yasushi et al. Alteration of the fecal microbiota and serum metabolite profiles in dogs with idiopathic inflammatory bowel disease. *Gut Microbes* 2014; article in press.
- White et al. Effect of VSL#3 probiotic strains on the intestinal microbiota in canine inflammatory bowel disease (abstr). *J Vet Intern Med* 2014; in press.
- White et al. Probiotic VSL#3 alters the mucosal biofilm, immune response, and tight junction protein expression in canine inflammatory bowel disease. *Gastroenterology* 2014; in press.

Report to Grant Sponsor from Investigator:

Idiopathic inflammatory bowel disease (IBD) is a common cause of chronic gastrointestinal disease in dogs. Accumulating evidence in human IBD and animal models suggests that imbalances in composition of the intestinal microbiota contribute to the pathogenesis of chronic intestinal inflammation. Recent studies in dogs with IBD have shown that they have distinctly different duodenal microbial communities compared to healthy dogs. Current treatments for IBD include the administration of nonspecific anti-inflammatory drugs which may confer serious side effects and do not address the underlying basis for disease, namely, altered microbial composition. Use of probiotics (viable, non-pathogenic bacteria that exert health benefits beyond basic nutrition) offers an attractive, physiologic, and non-toxic alternative to shift the balance to protective species and treat IBD. The aim of the proposed study is to investigate the



clinical, microbiologic, and anti-inflammatory effects of probiotic VSL#3 in the treatment of canine IBD. We hypothesize that VSL#3 used as an adjunct to standard therapy (i.e., elimination diet and prednisone) will induce a beneficial alteration of enteric bacteria leading to induction and maintenance of remission in dogs with IBD. A randomized, controlled clinical trial of 8 weeks duration is presently being performed to assess the efficacy of standard therapy + probiotic versus standard therapy alone.

Our data to date suggests that dogs treated with VSL#3 do respond favorably to the probiotic as evidenced by a reduction in their clinical disease severity. Our results also indicate that VSL#3 probiotic supplementation increased the numbers of beneficial bacteria at the mucosal level which may contribute, at least in part, to improved clinical recovery. The performance of gene expression studies will demonstrate how the host responds to harmful (at diagnosis) and beneficial (post-VSL#3 supplementation) changes in microbial ecology.